

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. 007		3. EFFECTIVE DATE 08/15/2014		4. REQUISITION/PURCHASE REQ. NO.	
5. PROJECT NO. (If applicable)		6. ISSUED BY CPOD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268		7. ADMINISTERED BY (If other than Item 6) CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) BATTELLE MEMORIAL INSTITUTE 505 KING AVE COLUMBUS OH 432012693		(x)		9A. AMENDMENT OF SOLICITATION NO.	
				9B. DATED (SEE ITEM 11)	
		X		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-11-038 0011	
				10B. DATED (SEE ITEM 13) 11/01/2012	
CODE (b)(4)		FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)
X	FAR 52.243-2, Changes--Cost-Reimbursement

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: (b)(4)

The purpose of this modification is to revise the Task Order end date to August 31, 2014. The date is revised to accommodate a new 1-year follow-on Task Order. This is a No Cost change.

TOPO: Eric Kleiner

LIST OF CHANGES:

Reason for Modification : Other Administrative Action

Period Of Performance End Date changed

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Camille W. Davis	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16C. DATE SIGNED 08/15/2014	16B. ELECTRONIC SIGNATURE Camille W. Davis

CONTINUATION SHEET

REFERENCE NO. OF DOCUMENT BEING CONTINUED

EP-C-11-038/0011/007

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OF

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NAME OF OFFEROR OR CONTRACTOR

BATTELLE MEMORIAL INSTITUTE

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	From: November 03, 2014 To: August 31, 2014 Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center Mail Drop D143-02 109 TW Alexander Drive Durham NC 27711 Period of Performance: 11/01/2012 to 08/31/2014				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. 006		3. EFFECTIVE DATE 06/18/2014		4. REQUISITION/PURCHASE REQ. NO. See Schedule	
5. PROJECT NO. (If applicable)		6. ISSUED BY CPOD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268		7. ADMINISTERED BY (If other than Item 6) CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) BATTELLE MEMORIAL INSTITUTE 505 KING AVE COLUMBUS OH 432012693		(x)		9A. AMENDMENT OF SOLICITATION NO.	
				9B. DATED (SEE ITEM 11)	
		x		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-11-038 0011	
				10B. DATED (SEE ITEM 13) 11/01/2012	
CODE (b)(4)		FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

- ☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Decrease: -\$44,557.00
See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) Notification of Funds Notice

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: (b)(4)

The purpose of this modification is to de-obligate funding from the task order.

TOPO: Eric Kleiner

LIST OF CHANGES:

Reason for Modification : Funding Only Action

Obligated Amount for this Modification: -\$44,557.00

Incremental Funded Amount changed

From: \$225,753.00

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Camille W. Davis	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16C. DATE SIGNED 06/18/2014	ELECTRONIC SIGNATURE Camille W. Davis

CONTINUATION SHEET

REFERENCE NO. OF DOCUMENT BEING CONTINUED
EP-C-11-038/0011/006

PAGE 2 OF 2

NAME OF OFFEROR OR CONTRACTOR
BATTELLE MEMORIAL INSTITUTE

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>To: \$181,196.00</p> <p>CHANGES FOR ACCOUNTING CODE: 13-14-C-261E000-301FK8XPW-2532-26A6F-13261EC316-001 Account code changed from 13-14-C-261E000-301FK8XPW-2532--26A6F-13261EC316-001 to 13-14-C-261E000-301FK8XPW-2532-26A6F-13261EC316-001 Amount changed from \$44,557.00 to \$0.00</p> <p>Cost: (\$ (b)(4)) Fee: (\$) Total: (\$44,557.00)</p> <p>Revised Task Order funding is as follows:</p> <p>Cost: \$ (b)(4) Fee: \$ Total: \$181,196.00</p> <p>Delivery Location Code: CPOD CPOD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268 USA</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center Mail Drop D143-02 109 TW Alexander Drive Durham NC 27711</p> <p>FOB: Destination Period of Performance: 11/01/2012 to 11/03/2014</p>				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. 005		3. EFFECTIVE DATE 11/01/2013		4. REQUISITION/PURCHASE REQ. NO. See Schedule	
5. PROJECT NO. (If applicable)		6. ISSUED BY CPOD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268		7. ADMINISTERED BY (If other than Item 6) CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) BATTELLE MEMORIAL INSTITUTE 505 KING AVE COLUMBUS OH 432012693		(x)		9A. AMENDMENT OF SOLICITATION NO.	
				9B. DATED (SEE ITEM 11)	
		X		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-11-038 0011	
				10B. DATED (SEE ITEM 13) 11/01/2012	
CODE (b)(4)		FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) Mutual Agreement between the Parties and e-mails dated 10/31/01 and 11/01/13 between EPA and Battelle

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: (b)(4)

The purpose of this modification is to exercise the option to extend the Task Order Period of Performance for an additional year. The Period of Performance is hereby extended through November 3, 2014. This is a No Cost extension.

TOPO: Eric Kleiner

LIST OF CHANGES:

Reason for Modification: Task Order Extension

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Camille W. Davis	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)	16C. DATE SIGNED 11/01/2013

CONTINUATION SHEET

REFERENCE NO. OF DOCUMENT BEING CONTINUED
EP-C-11-038/0011/005PAGE OF
2 2NAME OF OFFEROR OR CONTRACTOR
BATTELLE MEMORIAL INSTITUTE

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Period Of Performance End Date changed From: November 1, 2013 To: November 3, 2014</p> <p>This is a No Cost extension. Delivery Location Code: CPOD CPOD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268 USA</p> <p>Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center Mail Drop D143-02 109 TW Alexander Drive Durham NC 27711</p> <p>FOB: Destination Period of Performance: 11/01/2012 to 11/03/2014</p>				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE		PAGE OF PAGES 1 2												
2. AMENDMENT/MODIFICATION NO. 004		3. EFFECTIVE DATE 07/22/2013		4. REQUISITION/PURCHASE REQ. NO. See Schedule		5. PROJECT NO. (If applicable)											
6. ISSUED BY CPOD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268		7. ADMINISTERED BY (If other than Item 6) CODE															
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) BATTELLE MEMORIAL INSTITUTE 505 KING AVE COLUMBUS OH 432012693				(x) 9A. AMENDMENT OF SOLICITATION NO. 9B. DATED (SEE ITEM 11) x 10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-11-038 0011 10B. DATED (SEE ITEM 13) 11/01/2012													
CODE (b)(4)		FACILITY CODE															
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS																	
<input type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.																	
12. ACCOUNTING AND APPROPRIATION DATA (If required) See Schedule				Net Increase:		\$44,557.00											
13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.																	
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">CHECK ONE</td> <td>A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.</td> </tr> <tr> <td></td> <td>B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).</td> </tr> <tr> <td></td> <td>C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:</td> </tr> <tr> <td></td> <td>D. OTHER (Specify type of modification and authority)</td> </tr> <tr> <td style="text-align: center;">X</td> <td>Limitation of Funds Notice</td> </tr> </table>								CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.		B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).		C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:		D. OTHER (Specify type of modification and authority)	X	Limitation of Funds Notice
CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.																
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).																
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:																
	D. OTHER (Specify type of modification and authority)																
X	Limitation of Funds Notice																
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not. <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.																	
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)																	
DUNS Number: (b)(4)																	
The purpose of this modification is to add incremental funding to fully fund the Task Order.																	
TOPO: Eric Kleiner																	
LIST OF CHANGES:																	
Reason for Modification : Funding Only Action																	
Obligated Amount for this Modification: \$44,557.00																	
New Total Obligated Amount for this Award: \$225,753.00																	
Incremental Funded Amount changed From \$181,196.00 to \$225,753.00.																	
Continued ...																	
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.																	
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)													
				Camille W. Davis													
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED											
(Signature of person authorized to sign)				(Signature of Contracting Officer)													

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED EP-C-11-038/0011/004	PAGE 2 OF 2
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NAME OF OFFEROR OR CONTRACTOR
BATTELLE MEMORIAL INSTITUTE

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>CHANGES FOR LINE ITEM NUMBER: 1</p> <p>Obligated Amount for this modification: \$44,557.00</p> <p>Incremental Funded Amount changed from \$181,196.00 to \$225,753.00</p> <p>NEW ACCOUNTING CODE ADDED:</p> <p>Account code:</p> <p>13-14-C-261E000-301FK8XPW-2532--26A6F-13261EC316-001</p> <p>Beginning Fiscal Year 13</p> <p>Ending Fiscal Year 14</p> <p>Fund (Appropriation) C</p> <p>Budget Organization 261E000</p> <p>Program (PRC) 301FK8XPW</p> <p>Budget (BOC) 2532</p> <p>Job # (Site/Project)</p> <p>Cost Organization 26A6F</p> <p>DCN-LineID 13261EC316-001</p> <p>Quantity: 0</p> <p>Amount: \$44,557.00</p> <p>The break-out for this incremental funding is as follows:</p> <p>Cost: (b)(4)</p> <p>Fee: \$</p> <p>Total: \$44,557.00</p> <p>The revised break-out for the entire Task Order amount is as follows:</p> <p>Cost: (b)(4)</p> <p>Fee: \$</p> <p>Total: \$225,753.00</p> <p>Delivery Location Code: CPOD</p> <p>CPOD</p> <p>US Environmental Protection Agency</p> <p>26 West Martin Luther King Drive</p> <p>Mail Code: NWD</p> <p>Cincinnati OH 45268 USA</p> <p>Payment:</p> <p>RTP Finance Center</p> <p>US Environmental Protection Agency</p> <p>RTP-Finance Center</p> <p>Mail Drop D143-02</p> <p>109 TW Alexander Drive</p> <p>Durham NC 27711</p> <p>FOB: Destination</p> <p>Period of Performance: 11/01/2012 to 11/01/2013</p>				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. 003		3. EFFECTIVE DATE 05/10/2013		4. REQUISITION/PURCHASE REQ. NO. See Schedule	
5. PROJECT NO. (If applicable)		6. ISSUED BY CPOD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268		7. ADMINISTERED BY (If other than Item 6) CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) BATTELLE MEMORIAL INSTITUTE 505 KING AVE COLUMBUS OH 432012693		(x)		9A. AMENDMENT OF SOLICITATION NO.	
				9B. DATED (SEE ITEM 11)	
		x		10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-11-038 0011	
				10B. DATED (SEE ITEM 13) 11/01/2012	
CODE (b)(4)		FACILITY CODE			

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended. ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) Net Increase: \$40,082.00
See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)
X	Limitation of Funds Notice

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: (b)(4)

The purpose of this modification is to add incremental funds in the amount of \$40,082.00 to the task order.

TOPO: Eric Kleiner

LIST OF CHANGES:

Reason for Modification : Funding Only Action

Obligated Amount for this Modification: \$40,082.00

New Total Obligated Amount for this Award: \$181,196.00

Incremental Funded Amount changed From \$141,114.00 to \$181,196.00.

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Camille W. Davis	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)	16C. DATE SIGNED 05/10/2013

NAME OF OFFEROR OR CONTRACTOR
BATTELLE MEMORIAL INSTITUTE

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>CHANGES FOR LINE ITEM NUMBER: 1</p> <p>Obligated Amount for this modification: \$40,082.00</p> <p>Incremental Funded Amount changed from \$141,114.00 to \$181,196.00</p> <p>CHANGES FOR ACCOUNTING CODE:</p> <p>12-13-C-261E000-301FK8XPV-2532---12261EC046-001</p> <p>Account code changed from</p> <p>12-13-C-261E000-301FK8XPV-2532-12261EC046-001 to</p> <p>12-13-C-261E000-301FK8XPV-2532---12261EC046-001</p> <p>NEW ACCOUNTING CODE ADDED:</p> <p>Account code:</p> <p>12-13-C-261E000-301FK8XPV-2532--26A6F-13261EC065-001</p> <p>Beginning FiscalYear 12</p> <p>Ending Fiscal Year 13</p> <p>Fund (Appropriation) C</p> <p>Budget Organization 261E000</p> <p>Program (PRC) 301FK8XPV</p> <p>Budget (BOC) 2532</p> <p>Job # (Site/Project)</p> <p>Cost Organization 26A6F</p> <p>DCN-LineID 13261EC065-001</p> <p>Quantity: 0</p> <p>Amount: \$40,082.00</p> <p>The funding break-out for this incremental funding is as follows:</p> <p>Cost: \$(b)(4)</p> <p>Fee: \$</p> <p>TOTAL: \$40,082.00</p> <p>The revised total funding amount break-out is as follows:</p> <p>Cost: (b)(4)</p> <p>Fee: \$</p> <p>TOTAL: \$181,196.00</p> <p>Payment:</p> <p>RTP Finance Center</p> <p>US Environmental Protection Agency</p> <p>RTP-Finance Center</p> <p>Mail Drop D143-02</p> <p>109 TW Alexander Drive</p> <p>Durham NC 27711</p> <p>FOB: Destination</p> <p>Period of Performance: 11/01/2012 to 11/01/2013</p>				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE

PAGE OF PAGES

1

3

2. AMENDMENT/MODIFICATION NO.

002

3. EFFECTIVE DATE

02/22/2013

4. REQUISITION/PURCHASE REQ. NO.

5. PROJECT NO. (If applicable)

6. ISSUED BY

CODE

CPOD

7. ADMINISTERED BY (If other than Item 6)

CODE

CPOD

US Environmental Protection Agency

26 West Martin Luther King Drive

Mail Code: NWD

Cincinnati OH 45268

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

(x)

9A. AMENDMENT OF SOLICITATION NO.

BATTELLE MEMORIAL INSTITUTE

505 KING AVE

COLUMBUS OH 432012693

9B. DATED (SEE ITEM 11)

10A. MODIFICATION OF CONTRACT/ORDER NO.

EP-C-11-038

0011

10B. DATED (SEE ITEM 13)

11/01/2012

CODE (b)(4)

FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

- ☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

X

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: (b)(4)

The purpose of this modification is to Add an additional Alternate Task Order Manager, Michael Elovitz.

TOPO: Eric Kleiner

LIST OF CHANGES:

Reason for Modification : Other Administrative Action

Total Amount for this Modification: \$0.00

The purpose of this modification is to add an additional Alternate Task Order Manager, Michael Elovitz. See attached page.

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)

Camille W. Davis

15B. CONTRACTOR/OFFEROR

15C. DATE SIGNED

16B. UNITED STATES OF AMERICA

16C. DATE SIGNED

(Signature of person authorized to sign)

(Signature of Contracting Officer)

02/22/2013

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED	PAGE	OF
	EP-C-11-038/0011/002	2	3

NAME OF OFFEROR OR CONTRACTOR
 BATTELLE MEMORIAL INSTITUTE

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	Payment: RTP Finance Center US Environmental Protection Agency RTP-Finance Center Mail Drop D143-02 109 TW Alexander Drive Durham NC 27711 Period of Performance: 11/01/2012 to 11/01/2013				

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE OF PAGES 1 6	
2. AMENDMENT/MODIFICATION NO. 001		3. EFFECTIVE DATE 02/11/2013		4. REQUISITION/PURCHASE REQ. NO. PR-ORD-12-02770	
5. PROJECT NO. (If applicable)		6. ISSUED BY CPD		7. ADMINISTERED BY (If other than Item 6) CPD	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) BATTELLE MEMORIAL INSTITUTE 505 KING AVE COLUMBUS OH 432012693		9A. AMENDMENT OF SOLICITATION NO.		9B. DATED (SEE ITEM 11)	
10A. MODIFICATION OF CONTRACT/ORDER NO. EP-C-11-038 0011		10B. DATED (SEE ITEM 13) 11/01/2012			
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☐ is not extended.
Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) Changes-Cost-Reimbursement, Clause FAR 52.243-2

E. IMPORTANT: Contractor ☒ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

DUNS Number: (b)(4)

The purposes of this modification are to: incorporate PWS revisions to Task #3; add Task #5 to the PWS; revise the Task Order cost and fee ceilings; and change the Task Order Manager and Alternate Task Order Manager. Additional funding will be added to the task order when funding becomes available.

TOPO: Eric Kleiner

LIST OF CHANGES:

Reason for Modification : Additional Work

Continued ...

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Camille W. Davis	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)	16C. DATE SIGNED

CONTINUATION SHEET	REFERENCE NO. OF DOCUMENT BEING CONTINUED EP-C-11-038/0011/001	PAGE 2	OF 6
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NAME OF OFFEROR OR CONTRACTOR
BATTELLE MEMORIAL INSTITUTE

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>Total Amount for this Modification: \$84,639.00</p> <p>New Total Amount for this Award: \$225,753.00</p> <p>TOCOR (Task Order Contracting Officer's Representative) changed To: Eric Kleiner</p> <p>Alternate COR/Project Officer changed To : Craig Patterson</p> <p>CHANGES FOR LINE ITEM NUMBER: 1</p> <p>Total Amount changed from \$141,114.00 to \$225,753.00</p> <p>The revised Task Order break-outs are as follows:</p> <p>Cost: (b)(4)</p> <p>Fee: </p> <p>TOTAL: \$225,753.00</p> <p>Payment:</p> <p>RTP Finance Center US Environmental Protection Agency RTP-Finance Center Mail Drop D143-02 109 TW Alexander Drive Durham NC 27711</p> <p>FOB: Destination</p> <p>Period of Performance: 11/01/2012 to 11/01/2013</p>				

ORDER FOR SUPPLIES OR SERVICES

PAGE 1 OF 10 PAGES

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

1. DATE OF ORDER 11/01/2012	2. CONTRACT NO. (If any) EP-C-11-038	6. SHIP TO: a. NAME OF CONSIGNEE CPOD
3. ORDER NO. 0011	4. REQUISITION/REFERENCE NO. See Schedule	

5. ISSUING OFFICE (Address correspondence to) CPOD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268	b. STREET ADDRESS US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD	c. CITY Cincinnati	d. STATE OH	e. ZIP CODE 45268
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7. TO: a. NAME OF CONTRACTOR BATTELLE MEMORIAL INSTITUTE	f. SHIP VIA
--	-------------

b. COMPANY NAME	8. TYPE OF ORDER <input type="checkbox"/> a. PURCHASE <input checked="" type="checkbox"/> b. DELIVERY REFERENCE YOUR: Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if any, including delivery as indicated.	
c. STREET ADDRESS 505 KING AVE		
d. CITY COLUMBUS	e. STATE OH	f. ZIP CODE 432012693

9. ACCOUNTING AND APPROPRIATION DATA See Schedule	10. REQUISITIONING OFFICE CPOD
--	-----------------------------------

11. BUSINESS CLASSIFICATION (Check appropriate box(es)) <input type="checkbox"/> a. SMALL <input checked="" type="checkbox"/> b. OTHER THAN SMALL <input type="checkbox"/> c. DISADVANTAGED <input type="checkbox"/> d. WOMEN-OWNED <input type="checkbox"/> e. HUBZone <input type="checkbox"/> f. SERVICE-DISABLED VETERAN-OWNED <input type="checkbox"/> g. WOMEN-OWNED SMALL BUSINESS (WOSB) ELIGIBLE UNDER THE WOSB PROGRAM <input type="checkbox"/> h. EDWOSB	12. F.O.B. POINT Destination
---	---------------------------------

13. PLACE OF a. INSPECTION Destination	b. ACCEPTANCE Destination	14. GOVERNMENT B/L NO.	15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date)	16. DISCOUNT TERMS
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17. SCHEDULE (See reverse for Rejections)

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
	DUNS Number: (b)(4) Effect of Bromide in Surface Water Intake on the Formation of Brominated Trihalomethanes at Public Water System Treatment Plants TOPO: Craig Patterson Continued ...					

SEE BILLING INSTRUCTIONS ON REVERSE	18. SHIPPING POINT	19. GROSS SHIPPING WEIGHT	20. INVOICE NO.	17(h) TOTAL (Cont. pages)
	21. MAIL INVOICE TO:			
	a. NAME RTP Finance Center			\$141,114.00
	b. STREET ADDRESS (or P.O. Box) US Environmental Protection Agency RTP-Finance Center Mail Drop D143-02 109 TW Alexander Drive			\$141,114.00
c. CITY Durham	d. STATE NC	e. ZIP CODE 27711	17(i) GRAND TOTAL	

22. UNITED STATES OF AMERICA BY (Signature)	23. NAME (Typed) Camille W. Davis TITLE: CONTRACTING/ORDERING OFFICER
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ORDER FOR SUPPLIES OR SERVICES
SCHEDULE - CONTINUATION

PAGE NO

2

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER

CONTRACT NO.

ORDER NO.

11/01/2012

EP-C-11-038

0011

ITEM NO. (a)	SUPPLIES/SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
0001	<p>Admin Office: CPOD US Environmental Protection Agency 26 West Martin Luther King Drive Mail Code: NWD Cincinnati OH 45268 Period of Performance: 11/01/2012 to 11/01/2013</p> <p>Effect of Bromide in Surface Water Intake on the Formation of Brominated Trihalomethanes at Public Water System Treatment Plants Award Type: Cost-plus-fixed-fee Total Estimated Cost: \$(b)(4) Fixed Fee: \$(b)(4) Completion Form Requisition No: PR-ORD-12-02770, PR-OW-12-00881</p> <p>Accounting Info: 12-13-C-261E000-301FK8XPV-2532-12261EC 046-001 BFY: 12 EFY: 13 Fund: C Budget Org: 261E000 Program (PRC): 301FK8XPV Budget (BOC): 2532 DCN - Line ID: 12261EC046-001 Funding Flag: Complete Funded: \$101,114.00</p> <p>Accounting Info: 12-13-B-40EI-201B53X31-2505-1240DWE106-001 BFY: 12 EFY: 13 Fund: B Budget Org: 40EI Program (PRC): 201B53X31 Budget (BOC): 2505 DCN - Line ID: 1240DWE106-001 Funding Flag: Complete Funded: \$40,000.00</p> <p>The obligated amount of award: \$141,114.00. The total for this award is</p>				141,114.00	

TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17(H))

\$141,114.00

AUTHORIZED FOR LOCAL REPRODUCTION
PREVIOUS EDITION NOT USABLE

OPTIONAL FORM 348 (Rev. 4/2006)

Prescribed by GSA FAR (48 CFR) 53.213(f)

PERFORMANCE WORK STATEMENT
STREAMS II
Task Order 0011, Battelle EP-C-11-038

TITLE: Effect of Bromide in Surface Water Intake on the Formation of Brominated Trihalomethanes at Public Water System Treatment Plants

Task Order Manager (TOM) Name: Craig L. Patterson, P.E. Office: U.S. EPA NRMRL/WSWRD 1600 Gest Street Cincinnati, Ohio 45204 Phone: (513) 487-2805 Fax: (513) 569-7052 Email: Patterson.Craig@epa.gov	Alternate Task Order Manager (ATOM) Name: Jeffery Q. Adams Office: U.S. EPA NRMRL/WSWRD 26 W. Martin Luther King Drive Cincinnati, Ohio 45268 Phone: (513) 569-7835 Fax: (513) 569-7185 Email: Adams.Jeff@epa.gov
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PERIOD OF PERFORMANCE: October 30, 2012 through October 30, 2013.
One 1-Year Option may be exercised at a later date.

It is anticipated there will be sampling studies two (2) times per quarter at 7 to 9 drinking water (DW) facilities in WV and PA, and 2 to 3 DW facilities on the Allegheny River with an estimated length of 24 months. The contractor will be required to bill costs associated with the 2 to 3 DW facilities on the Allegheny River separately as defined in the Subtasks listed below.

BACKGROUND

Information collected by Public Water Systems (PWS), as reported to the Pennsylvania Department of Environmental Protection (PA DEP), and West Virginia Bureau for Public Health indicates that elevated levels of brominated disinfection byproducts (DBP) are contributing to increases and exceedances of disinfection byproduct Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act (SDWA). Drinking water plants subject to standards for public water systems must meet DBP MCLs including:

- 80 ppb for total trihalomethanes (TTHM) which are comprised of bromodichloromethane, dibromodichloromethane bromoform and chloroform
- 60 ppb for haloacetic acids five (HAA5) which are comprised of: monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid

Trihalomethanes and haloacetic acids are formed when naturally-occurring organic and inorganic materials in the water react with chlorine. Disinfection byproducts are associated with serious health effects, notably increased risks from cancer, and impacts to liver, kidney, or central nervous system.

Beginning in 2012, water systems will be required to comply with more stringent TTHM and HAA5 MCL requirements. Although the MCL value will not change, the compliance locations and compliance calculations will change and it may become more difficult for systems to comply.

PADEP has noted that, since 2008, drinking water system operators have reported elevated levels of bromide in the Monongahela River.^a Higher ambient bromide levels also result in a shift in formation of DBPs from chlorinated to (more) brominated species. For TTHMs, this results in a shift away from chloroform to brominated THMs. For HAAs, this results in a shift away from regulated chlorinated HAAs to non-regulated brominated HAAs; only two of six brominated-HAAs are currently used to calculate compliance with the HAA5 MCL. While higher ambient bromide might not drive HAA5 MCL non-compliance by increasing HAA5 levels, it would result in higher HAA9 levels. These are also concerns because of evidence that brominated DBPs are more toxic than chlorinated DBPs.

Neither EPA nor the states of Pennsylvania or West Virginia have promulgated ambient water quality criteria for bromide based upon the human health effects caused by brominated disinfection byproducts. Knowledge of the amount of bromide in surface water intakes that results in elevated brominated DBPs in finished drinking water is needed by National Pollutant Discharge Elimination System (NPDES) permit writers seeking to establish discharge permit conditions by applying narrative water quality criteria for protection of designated drinking water use.

This knowledge could also inform development, if appropriate, of an EPA water quality criteria recommendation for bromide and/or development of bromide water quality criteria by the states of Pennsylvania or West Virginia.

TASKS

Task 1: Water Utility Coordination

Within 10 days upon the receipt of task order award, the contractor will meet with EPA to obtain contact information and the exact location of 7 to 9 DW treatment facilities located in PA (predominantly in the western portion of the state) and WV and 2 to 3 DW treatment facilities on the Allegheny River. The contractor will establish initial communication with DW facilities identified by EPA to develop a contact list of workers for sample handling, collection and shipment by the utility as well as field sample analysis. Information will also be obtained on the analytical equipment available and methods used at the utility for field sample analysis.

Subtask 1A Deliverable:

1. Meet with EPA within 10 days upon the receipt of task order
2. Coordinate with 7 to 9 DW facilities in WV and PA

Subtask 1B Deliverable:

1. Meet with EPA within 10 days upon the receipt of task order
2. Coordinate with 2 to 3 DW facilities on the Allegheny River

Subtask 1A and 1B Acceptance Criteria:

1. A list of utility contacts and their responsibilities
2. A list of analytical equipment and methods available at each utility

^a Pittsburgh Tribune Review "Mon River's unsafe levels of bromide prompt probe" 9/17/10

Task 2: QAPP Amendment

The contractor will review the Quality Assurance Project Plan, prepared and provided by EPA after task order award, for accuracy and include QA specific information from the DW facilities taking part in the study. The contractor will follow *EPA Requirements for Quality Assurance Project Plans*, EPA QA/R5, available at <http://www.epa.gov/quality/qs-docs/r5-final.pdf>.

Task 2 Deliverables:

Prepare a QAPP amendment for approval by EPA prior to initial sampling at DW facilities. The QAPP amendment is due 30 days after task order award.

Task 2 Acceptance Criteria:

1. A comprehensive sampling and analysis plan is required
2. The QAPP amendment shall clearly identify what information will be sought and what analysis will be performed in order to meet project objectives

Task 3: Preparation and Shipment of Sampling Kits

The contractor will provide logistical support for sampling source water and treated water within the DW treatment plant twice per quarter. Logistical support shall begin after EPA approval of the QAPP amendment and last for six (6) quarters from sampling commencement. To summarize, there will be two (2) sampling events per site per quarter. One of the two quarterly samples will be collected contemporaneously with samples collected for determining compliance with TTHM MCLs. Samples will include necessary volumes for analyzing the source water and volumes necessary for analyzing treated water. The contractor will provide required preservation methods for sample shipment. The contractor will assemble sampling kits in coolers for targeted analytes (see Table 1).

Table 1. Water Quality Parameters and Analysis Site

Parameter	Laboratory
Chloroform	Ft. Meade
Bromodichloromethane	Ft. Meade
Bromoform	Ft. Meade
Dibromochloromethane	Ft. Meade
Ammonia Nitrogen	Ft. Meade
Alkalinity	Ft. Meade
Lab pH	Ft. Meade
Chlorine (Free and Total)	Field and Cincinnati
Total Organic Carbon (TOC)	Cincinnati
Dissolved Organic Carbon (DOC)	Cincinnati
Chloride	Cincinnati
Bromide	Cincinnati
Bromate	Cincinnati
Total Dissolved Solids (TDS)	Cincinnati
TTHM Formation Potential	Cincinnati
UV254 Absorbance	Cincinnati
Dissolved Organic Matters (DOM)	Cincinnati
Conductivity	Field
Temperature	Field
pH	Field

Sampling kits will include adequate chain-of-custody documentation, sample bottles including all required preservatives, blanks (i.e., trip, field, rinse and temperature), specific directions for preservation, storage and shipment. The contractor will include calibration instructions, data sheets, and instructions for parameters to be measured in the field (e.g. pH, temperature, conductivity, total and free chlorine). The assembly of the first set of sampling kits shall be completed within 30 days after EPA's approval of the QAPP amendment.

Shipping information for samples shall be sent to two (2) EPA laboratories, including the Fort Meade R3 Regional Laboratory (Maryland) and the National Risk Management Research Laboratory (Cincinnati, OH). Methods to be employed, shipping locations, and preservation requirements are included in Table 2. In addition to sample volumes listed in Table 2, four (4) L from the source water will be required for laboratory studies on DBP formation. This volume of water will need to be preserved only by keeping the sample at $\leq 6^{\circ}\text{C}$ during shipment. The samples shall be shipped overnight to the respective laboratories.

The specific addresses for sample shipments are:

Kevin Martin
U.S. EPA, Region III, OASQA
Environmental Science Center
701 Mapes Road
Fort Meade, Maryland 20755-5350

and

Mike Elovitz
USEPA-NRMRL
26 West Martin Luther King Drive
Mail Stop 681
Cincinnati, OH 45268
Phone: 513-569-7642
e-mail: elovitz.michael@epa.gov

Subtask 3A Deliverable:

Prepare initial sampling kits with instructions for shipment to 7 to 9 DW facilities in WV and PA.

Subtask 3B Deliverables:

Prepare sampling kits with instructions for shipment to 2 to 3 DW facilities on the Allegheny River.

Subtask 3A Acceptance Criteria:

Shipment and successful delivery to 7 to 9 DW facilities in WV and PA two (2) times each quarter.

Subtask 3B Acceptance Criteria:

Shipment and successful delivery to 2 to 3 DW facilities on the Allegheny River two (2) times each quarter.

Lab/ Field	Method	Analyte	CAS #	Analyte Priority	Analytical Equipment Type	Detection Limit	Quantification (Reporting) Limit	Minimum Volume	Preservative	Holding Time	Expected Range Measurements
Fort Meade	EPA 524.2	Chloroform	76-66-3	Critical	Gas Chromatograph		0.5 µg/L	120 mL (3 vials filled with no headspace)	Dechlorinate with 25 mg ascorbic acid <u>2 drops 1:1 HCl [1]</u> pH<2 Cool, ≤ 6°C	14 days	0-80 µg/L
		Bromodichloro methane	75-27-4	Critical	Gas Chromatograph		0.5 µg/L				0-50 µg/L
		Bromoform	75-25-2	Critical	Gas Chromatograph		0.5 µg/L				0-50 µg/L
		Dibromochlor omethane	124-48-1	Critical	Gas Chromatograph		0.5 µg/L				0-50 µg/L
Fort Meade as backup to Cinci	SM 5310B	Total Organic Carbon (TOC)	NA	Critical	TOC Analyzer		3 mg/L	100 mL	sulfuric acid to pH<2, cool ≤ 6 °C	28 days	0-5 mg/L
Fort Meade as backup to Cinci	SM 5310B	Dissolved Organic Carbon (DOC)	NA	Critical	TOC Analyzer		3 mg/L	100 mL	filter in field if possible, sulfuric acid to pH<2, cool ≤ 6 °C	28 days	0-5 mg/L
Fort Meade	SM 4500- NH3 BG	Ammonia Nitrogen		Secondary	Colorimeter		0.04 mg/L	200 mL	cool, ≤ 6 °C sulfuric acid to pH<2	28 days	Unknown
Fort Meade	SM 2320B	Total Alkalinity (Bicarb and Carb)	NA	Secondary	Titration			200 mL [2]	Cool, ≤ 6°C	1 day	0-125 mg/L
Fort Meade	SW 846 9040C	Lab pH	NA	Secondary	pH meter	N/A	N/A	50 mL [2]	Cool, ≤ 6°C	1 day	6-9 S.U.
Field	EPA 120.1	Conductivity	NA	Secondary	Conductivity Meter	N/A	N/A	50 mL	none	Imme- diately	Unknown
Cinci	EPA 415.3 ²	Total Organic Carbon (TOC)	NA	Critical	TOC Analyzer	0.1 mg/L	LCMRL TBD	100 mL	sulfuric acid to pH<2, cool ≤ 6 °C	28 days	0-5 mg/L
Cinci	EPA 415.3 ²	Dissolved Organic Carbon (DOC)	NA	Critical	TOC Analyzer	0.1 mg/L	LCMRL TBD	100 mL	filter in field if possible, sulfuric acid to pH<2, cool ≤ 6 °C	28 days	0-5 mg/L
Cinci	EPA 300.1	Chloride	(NaCl) 7647-14-5	Secondary	Ion Chromatograph	MDL TBD	LCMRL TBD	200 mL	None	28 days	Unknown

Lab/ Field	Method	Analyte	CAS #	Analyte Priority	Analytical Equipment Type	Detection Limit	Quantification (Reporting) Limit	Minimum Volume	Preservative	Holding Time	Expected Range Measurements
Cinci	EPA 300.1	Bromide	(NaBr) 7647-15-6	Critical	Ion Chromatograph	MDL TBD	LCMRL TBD	200 mL	None	28 days	0-3100 µg/L
Cinci	EPA 300.1	Bromate	(BrO ₃ ⁻) 15541-45-4	Secondary	Ion Chromatograph	MDL TBD	LCMRL TBD	200 mL	None	28 days	Unknown
Cinci	Fluoresc ence	Dissolved Organic Matter (DOM)	NA	Secondary	Fluorescence analyzer	N/A	N/A	100 mL	filter in field if possible, sulfuric acid to pH<2, cool ≤6 °C	28 days	Unknown
Cinci	EPA 160.1	Total Dissolved Solids	NA	Secondary	filter/drying oven	MDL TBD	n/a	500 mL	Cool, ≤ 6°C	7 days	Unknown
Cinci	Hach Method 10132	TTHM+ formation	NA	Secondary	Water bath (boiling). Spectrometer (UV-VIS)	MDL TBD	LCMRL TBD	40 mL	Cool, ≤ 6°C	14 days	Unknown
Cinci	EPA 415.3 ²	UV 254 absorbance	NA	Critical	Spectrometer (UV-VIS)	N/A	N/A	100 mL	filter in field if possible, sulfuric acid to pH<2, cool ≤6 °C	Imme- diately	Unknown
Field	SM 2550	Temperature		Critical	Thermometer	N/A	N/A	200 mL	none	Imme- diately	50-80 F
Field	SM 4500H	pH	NA	Critical	pH meter	N/A	0 - 14	200 mL	none	Imme- diately	6-9 S.U.
Field	SM 2510B	Conductivity	NA	Secondary	Conductivity Meter	N/A	N/A	50 mL	none	Imme- diately	Unknown
Field & Cinci	SM 4500 Cl (G- DPD Method)	Chlorine, Residual (Free)	(Cl ₂) 7782-50-5	Critical	Spectrometer (UV-VIS)	MDL TBD (in lab)	LCMRL TBD (in lab)	200 mL	Cool, ≤ 6°C (for lab samples)	Imme- diately	0-5 mg/L
Field & Cinci	SM 4500 Cl (G- DPD Method)	Chlorine, Residual (Total)	(Cl ₂) 7782-50-5	Secondary	Spectrometer (UV-VIS)	MDL TBD (in lab)	LCMRL TBD (in lab)	200 mL	Cool, ≤ 6°C (for lab samples)	Imme- diately	0-5 mg/L

[1] When sampling for THM analysis only, acidification may be omitted if sodium thiosulfate is used to dechlorinate the sample. This exception to acidification does not apply if ascorbic acid is used for dechlorination.

[2] Note that EPA Method 415.3 requires 40mL to 1L total sample volume. Sample is used for TOC, DOC and UV254

Task 4: Technical Support and Travel to a Water Utility Workshop

The contractor will be expected to travel to a 1-day workshop on instrument calibration to assist EPA and water utility personnel during this task order. The location of the workshop will be at a convenient location within driving distance of the water utilities taking part in this project. The contractor may also be expected to travel to 7 to 9 water utilities in WV and PA and 2 to 3 water utilities on the Allegheny River to assist with trouble shooting of analytical equipment, review of analytical procedures, and calibration of instruments.

Subtask 4A Deliverables:

Coordinate workshop and troubleshooting visits with 7 to 9 DW facilities in WV and PA.

Subtask 4B Deliverables:

Coordinate workshop and troubleshooting visits with 2 to 3 DW facilities on the Allegheny River.

Task 4 Acceptance Criteria:

1. Delivery of a list of attendees from utility contacts and their responsibilities.
2. Delivery of a list of analytical equipment and methods available at each utility.
3. Successfully assisted EPA and water utility personnel during the workshop and with trouble shooting of analytical equipment, review of analytical procedures, and calibration of instruments.

**QUALITY ASSURANCE SURVEILLANCE PLAN (QASP)
STREAMS II**

Task Order 0011, Battelle EP-C-11-038

TITLE – Effect of Bromide in Surface Water Intake on the Formation of Brominated Trihalomethanes at Public Water System Treatment Plants

TASK ORDER MANAGER – Craig Patterson

Performance Objective (Task)	Performance Standard (PS)	Surveillance Plan Surveillance Plan (SP)	Contractor Incentive (CI)	✓ or X
Task 1: Water Utility Coordination	Within 10 days after Task Order award, the contractor will meet with EPA to obtain contact information and the exact location of 7-9 drinking water (DW) treatment facilities located in PA and WV.	TOM will document whether the contractor established initial communication with identified DW facilities for sample handling contact list, collection and shipment by the utility and field sample analysis, and obtained information on analytical equipment available and methods used at the utility for field sample analysis.	TOM will determine if meeting takes place within 10 days after Task Order award	X
Task 2: QAPP Amendment	Demonstrate familiarity/competence providing high quality QAPs that are clear, concise, informative, and timely. The QAPP is due 30 days after Task Order award.	TOM will document whether the contractor demonstrated knowledge and experience preparing the QAPPs, sampling and analysis plans, and sample handling and DOT shipping. The TOM will document whether quality of deliverable is at an acceptable level.	TOM will determine if the QAPP amendment is completed within 30 days after TO award.	X
Task 3: Preparation and Shipment of Sampling Kits	Provide logistical support for sampling source water and treated water within the DW treatment plant twice per quarter for six (6) quarters. Sampling kits shall include: adequate chain-of-custody documentation; sample bottles with required preservatives; blanks; directions for preservation, storage and shipment; calibration instructions; data sheets; & instructions for parameters to be measured in the field.	TOM will document whether the contractor successfully shipped sampling kits and instructions and demonstrated knowledge and experience in sample handling and DOT shipping.	TOM will determine if the contractor made two (2) shipments per quarter to the participating water utilities.	X